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Functional Document – FINCANTIERI Integration among SAP and PO

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# Introduction

This document is targeted to explainthe integration among SAP and PO for FINCANTIERI.

The integration will be done using a WSDL with multiple method

## Integration List

Here below the integration list to be made.

|  |  |  |  |
| --- | --- | --- | --- |
| **Integration ID** | **From** | **To** | **Description** |
| 1 | PO | SAP RI | Anagrafica Progetti |
| 2 | PO | SAP PLM | Anagrafica Deliverables, creazione e aggiornamento stato |
| 3 | SAP RI | PO | Project Data |
| 4 | SAP RI | PO | SAL Data |
| 5 | SAP RI | PO | Standard Rates |
| 6 | SAP RI | PO | Calculation Actual Personnel cost by project |
| 7 | SAP PS | PO | Cost Element master data |
| 8 | SAP PS | PO | WBS Master Data |
| 9 | SAP PS | PO | Internal Orders (alcuni progetti sono rappresentati per WBS altri per ordini interni) |
| 10 | SAP CO | PO | Costs |
| 11 | SAP HR | PO | Personnel Master Data |
| 12 | SAP RI | PO | Costs (costi per prestazioni esterne) |
| 13 | SAP RI | PO | Hours |
| 14 | SAP PLM | PO | Deliverable, aggiornamento attributi |

## Anagrafica progetti

### Mapping among our form and wsld exposed by SAP

Here below the table mapping

| **Field Name** | **SAP storage** | **Mandatory** | **Pre-defined value** | **POX Field** | **Comments** |
| --- | --- | --- | --- | --- | --- |
| Project name ( Progetto ) | ZRE\_ARCH\_PRJ – PROJ | YES | Free text maximum 6 char | Project ID | defined in the form |
| Project description | ZRE\_ARCH\_PRJ – DESCR | YES | Free text maximum 200 char | Title |  |
| Company code ( Societa ) | ZRE\_ARCH\_PRJ-BUKRS | YES | List of company codes defined in SAP | New Dropdown | A new table Company code will be defined, and a new dropdown will be added in the form under the section SAP Fields. |
| Plant ( DN ) | ZRE\_ARCH\_PRJ-WERKS | NO | List of plants defined in SAP | New Dropdown | This field is not mandatory to create a project but I suggest to insert it in the form and set it as not mandatory. A new table Plant will be defined, and a new dropdown will be added in the form under the section SAP Fields. |
| Project Type ( Tipologia di Progetto ) | ZRE\_ARCH\_PRJ-TIPOP | YES | 4 possible value | New Dropdown | A new table Project Type will be defined, and a new dropdown will be added in the form under the section SAP Fields. |
| Tipologia di ricercar | ZRE\_ARCH\_PRJ-TIPOR | YES | List of possible entries will be taken from SAP | YES | The same values exist in POX as in SAP |
| Data inizio Progetto | ZRE\_ARCH\_PRJ- IN\_PER | YES | Must always be the first day of the month | YES | It is the project start date |
| Data fine Progetto | ZRE\_ARCH\_PRJ- FINE\_PER | YES | Must always be the last day of the month | YES | It is the project end date |
| Flag cumulabilità | ZRE\_ARCH\_PRJ- FLG\_CUM | YES | Two possible entries N or S | YES | A new drop down will be defined under the section SAP Field with value blank, S and N |
| Tipologia di cumulabilità | ZRE\_ARCH\_PRJ- TIPO\_CUM | YES | Two possible entries N or L | YES | A new drop down will be defined under the section SAP Field with value L and N |
| Flag utilizzo straordinario | ZRE\_ARCH\_ PRJ- FLAG\_STR | YES | Two possible entries Blank or X | YES | A new check box will be defined under the section SAP Field with value blank or X |
| CUP\_NUM\_CONTRATTO | ZRE\_ARCH\_PRJ-CUD | NO | Free text maximum 40 char | NO | A free text cell will be defined under the section SAP. If possible to have a fields that accept only 40 characters the follow check is not required. A check will be done to send to SAP only the first 40 characters |
| Stato del Progetto | ZRE\_ARCH\_PRJ- ST\_PR | YES | Three possible values in SAP  **0         -Attivo**  **1         -Non attivo**  **9         -Chiuso** | YES | It is the project status; our values will be translating as show here below:  OPEN = 0  DRAFT or APPROVED = 1  CLOSED or ON HOLD = 9 |

### Project Form

In a new section available in the TAB General data will be added two new fields:

1. Self-financing project:
2. The subsidiary is on in SAP:/

Graphical user interface, application, email

Description automatically generated

A new TAB “SAP Fields” will be added. In this TAB will be added some fields that to filled only if the Project will be set as SAP. Here below the fields list to be inserted in that tab.

The request is to have the TAB SAP Fields, those fields available and then mandatory only if the flag “Subsidiary is on in SAP” is set to YES.

The TAB SAP FIELDS will remain editable till step 5 of the workflow. After will be in read only

Graphical user interface, text, application, email

Description automatically generated

### When the data will be sent to SAP

The Project data will be sent to SAP when the step 6 is released and if the field “subsidiary is on in SAP” is set to “YES”.

After this step the data will be sent to SAP when a change happens over project status value.

The data will be sent in asynchronous mode, a service will check every day (in the night) the Project data changed, and if one of the before fields values is changed the Project data must be sent.

In order to maintain a history and check the data change is usefully create history tables (check Project data) as show here below.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ID\_chk | Run date | obj\_id | c\_prog | Project code | title | start date | finish date | Project status | step\_id | id\_state | id\_sent |
| 1 | 22/01/2022 | 1 | 1 | c0001 | title | 01/01/2022 | 31/12/2022 | 9 | 2 | changed | Null |
| 2 | 23/01/2022 | 1 | 1 | c0001 | title | 01/01/2022 | 31/12/2022 | 9 | 2 | Not changed | Null |
| 3 | 24/01/2022 | 1 | 1 | c0001 | title | 01/01/2022 | 31/12/2022 | 9 | 4 | changed | Null |
| 4 | 25/01/2022 | 1 | 1 | c0001 | title | 01/01/2022 | 31/12/2022 | 9 | 5 | changed | 1 |
| 5 | 26/01/2022 | 1 | 1 | c0001 | title | 01/01/2022 | 31/12/2022 | 9 | 6 | changed | 2 |

Then another tables (queue Project data) is requested to list all the Project data to be sent

It includes all the fields that we have to send to sap with more other useful fields as show here below.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Id\_sent | Run date time | Obj\_id | state\_id | Status description | Project ID | Title | Cmpy code | Plant | Project Type | Searching type | Start date | Finish date | Flag cum. | Tipo Cum. | Flag US | CUP nr. | Project status |
| 1 | 25/01/2022 | 1 | 10 | error message sent by SAP WSDL | C0001 | title | C01 | NULL | T1 | T1 | 01/01/2022 | 31/12/2022 | x | x | x | 1234 | 0 |
| 2 | 26/01/2022 | 1 | 01 | Sent succefully | C0001 | title | C01 | NULL | T1 | T1 | 01/01/2022 | 31/12/2022 | x | x | x | 1234 | 0 |

## Deliverables

The deliverable in POX is a document form under a workflow. The deliverable is created in POX, is sent to SAP only if the Project data has been already sent to SAP. So, in case the field “subsidiary is on in SAP” is set to “NO” the Project is not sent to SAP and also the Deliverables should not send to SAP.

So, the trigger is the project.

The deliverables can be created only when the Project is in execution phase, when the demand phase has been closed. This happens when the Sanctioning Committee has been done, so the workflow is in step 7.

### POX VS SAP – RULE

The data that we have to send a SAP are:

|  |  |  |
| --- | --- | --- |
| Field name | Description | Note |
| documento | Code | Form code (to be defined with Fincantieri’s)  For testing purpose is fine the number assigned by the object number |
| tipoDocumento | Document Type | Possible Values (DEL/SOW)  A new dropdown field will be added in the form |
| sottodocumento | Part | A new text field (3 characters) will be added in the form. It could accept only number. |
| versioneDocumento | Version | A new dropdown field will be added in the form. Possible value (00 to 99). |
| descrizione | Title |  |
| statoDocumento | Document Status | A new dropdown field will be added in the form. Only the CR value is accepted. |
| utenteCreazione | Responsible | Seem that we have to send the username. |
| laboratorio | Laboratory | A new dropdown field will be added in the form. Multiple value will be available. The full list will be provided by Fincantieri’s (A01, A02) |
| deliverable | Document name | TBD, for now I suggest inserting a new text field in the form. |
| Data scadenza (Due date) | Due Date | Field already defined in the form |
| Data Riprevisione (re-forecast date) | Re-Forecast date | Field already defined in the form with different description (Actual delivery date) |
| Modulo | Document number | It will be generated automatically with the follow rule: Project-id+4 characters  I’ll provide you further details |
| Codice Progetto (Project id) | Project name |  |

### SAP Vs PO – RULE

Once a day from SAP we will send to Project Objects all documents that have the creation date after GOLIVE with the status. This way we make sure that the two systems are aligned. All necessary information will be extracted from the standard SAP DRAW table.

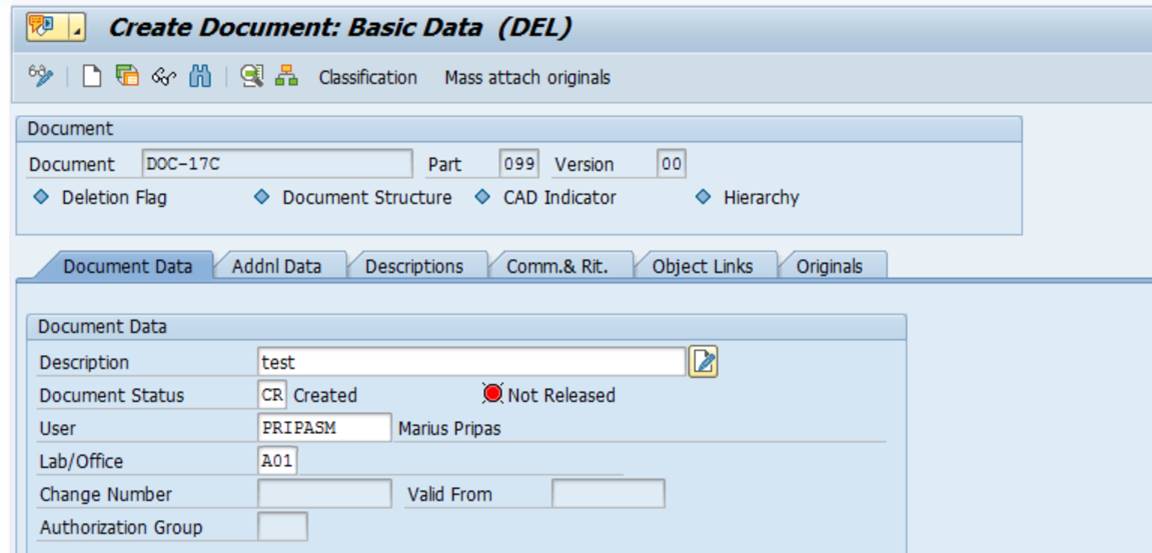
We have to update the document received from SAP **only if the document exists in our POX and we have already sent to SAP the Project and the deliverable.**

### Deliverable FORM in POX

Here attached the deliverable form (to be defined)

### DeLiverable form in SAP





## SAL

The SAL data will be provided by SAP. The data will be inserted only if the Project is already sent to SAP.

A dedicated method will be created to get the data from SAP POX.

### SAL Widget

In the Project workspace a new simple widget will be created to show the data received from SAP like this one here below attached. The data will be presented in read only mode.

The widget could have multiple rows. The rows will be displayed in order of the date changed ordering it from the most recently. In the example here below attached the field Project must not show.

So the follow field will be inserted in the widget:

* Start Period
* End Period
* Opening
* Status of SAL
* Changed on

Graphical user interface, text, application

Description automatically generated

### SAP to POX Rule

A new method will be developed to get the data from SAP.

The method will have the follow structure.

The primary key to insert the data or update an existing record one is the PROJ and DT\_INI field.

|  |  |  |  |
| --- | --- | --- | --- |
| Field name | Key Field | Description | Note |
| MANDT |  | Client code |  |
| PROJ | Primary Key | Project ID | To be used to associated this data into the right project |
| DT\_INI | Primary Key | Start Period date | To be inserted in the widget |
| DT\_FINE |  | End Period date | To be inserted in the widget |
| AP\_CH |  | Flag Open/Close | To be inserted in the widget |
| STATO |  | Record Status | To be inserted in the widget |
| DT\_MOD |  | Last Changed (date) | To be inserted in the widget together in format yyyy-mm-dd HH:MM:SS |
| TM\_MOD |  | Last Changed (Time) |

## SAP RI to PO – Indirect Hours (Internal labour Cost)

The cost data will be received from SAP only if the project data have been already sent to SAP.

With this integration SAP sent the follow information:

* Hours
* Rate in a period
* Total labour cost
* Other cost

The purpose is to update the generic resource “TBD” already assigned in the project in terms of:

* Actual hours in the period
* Cost Rate in the period – The cost rate over the period is an average of the rates of the named resources who worked on that project. Then the cost about the generic resource will be updated forcing the re-calculations.

For this reason, the project rate will be updated using the sap rate and setting the start and end date it too received from SAP.

Then is possible that also other cost is sent, in this case it is about the external labour costs

In this case the cost account code about the external costs will be set in the project and the actual value will update about the period received.

From SAP is always received the total amount in the period. The structure of the data received is described here below

|  |  |  |
| --- | --- | --- |
| Field Name | Field Description | Note |
| Project Code | Project ID | Project code |
| Year Start date | Start period | Start Period Date |
| End of Year | Finish period | End Period Date |
| Start SAL Period | Start SAL Period |  |
| End SAL Period | End SAL Period |  |
| RATE Type | Rate Type | Value I or O  \*Needs further clarification |
| Reporting | Cost Rate | Hours cost rate in EURO |
| Rate Flag |  | No actions is required |
| Deduct Hours | Hours | Hours done in the period |
| Reporting | Labour Cost | Labour Cost in the period |
| Adjustment |  |  |
| Reporting | Other cost | \*Needs further clarification |
|  |  |  |

Here below a screenshot taken from SAP about the costs

Graphical user interface

Description automatically generated

Graphical user interface, application, table

Description automatically generated

To Be confirmed: the other costs are about mission cost?

## PO to SAP - WBS and Internal Order

The WBS and Internal Order master data come from SAP through other flows. POX can get those master data only if the 'Subsidiary is active in SAP' field is set to 'YES' and the Project is already sent to SAP.

Then in the workspace, a new widget will be developed to associate the WBS and/or Internal Order to the Project.

In asynchronous mode, during the night, PO must send to SAP only the new associations done in the workspace.

Is mandatory to track the association date and sent always all the associations done in PO.

### WBS – Internal Order Widget

A new widget in the Project workspace will be created to associate the WBS and the Internal Order.

The widget will be presented empty because the number of WBS and Internal Orders is very high (more than 300.000). A search field will be inserted in the widget to allow the searching by code and by description. The WBS list or Internal Order list will become in the left panel after that the user has insert some search criteria. Then the user can select one or multiple elements and move those elements in right panel to save the association.

### How to send the data to SAP

In this case SAP will expose a method with the follow fields

|  |  |  |
| --- | --- | --- |
| Field Name | Field description | Note |
| MANDT | Client |  |
| ZRE\_PROG | Codice Progetto | Project Code |
| ZRE\_WBS | Elemento WBS | WBS Code |
| WERKS\_D | Plant | From Project form TAB “SAP Fields” |
| ZRE\_FLAG\_OI | WBS / Internal Order | To be set according with the kind of association done  “X” means “internal order”; “blank” means “WBS” |
| PS\_PGSBR | Business area for WBS Element | To be set with value “blank” |
| ZRE\_ACT | Attività | Possible values (~~PR, SV, SP, IN~~, RI, SS, CP, DD)  \*Needs further clarification |
| ZRE\_Modulo | Modulo o Task | Possible values (~~PR, SV, SP, IN~~, RI, SS, CP, DD)  \*Needs further clarification |
| ZRE\_STATO\_MOV | Record Status | To set with value: "0” |
| Changedate | Last Change on YYYY-MM-DD | To be set with the date of the change done in PO |
| Changetime | Last Change at HH:MM:SS | To be set with the time of the change done in PO |
| ZRE\_FLAG\_TC | Flag Assorbimento Cost | Possible value (H/C/blank) H: Hours, C: Cost “blank”: Both  \*Needs further clarification |

The data will be sent in asynchronous mode, in the night a procedure must check in the association table. To avoid loss of data, in case a user removes some association, we must always send the full list of the association done. SAP must manage it.

Clarification point: sap need to receive all the entire set of data? Is possible remove an association in POX?

## WBS and Internal Order SAp to PO

The WBS and the internal order are sent from SAP to PO. There are a very huge of records about this integration. To receive less data from SAP only a restricted range of internal order will be considerate, the range is: 009000000 – 009999999.

### WBS Data structure

A method will be created to get this máster data, here below the data structure

|  |  |  |
| --- | --- | --- |
| Field name | Field Description | Note |
| PSPNR | WBS Number |  |
| POST1 | WBS Description |  |
| OBJNR | SAP Object Number |  |

### Internal Order Data structure

A method will be created to get this máster data, here below the data structure

|  |  |  |
| --- | --- | --- |
| Field name | Field Description | Note |
| AUFNR | Internal Order Number |  |
| KTEXT | Internal Order Description |  |
| OBJNR | SAP Object Number |  |

### Staging Table in PO

A new staging table will be created to store WBS and the internal order, I suggest using one table to store both kind of objects identifying the different objects by a flag.

|  |  |  |
| --- | --- | --- |
| Field name | Field Description | Note |
| WBS | Internal Order / WBS Number |  |
| KTEXT | Internal Order / WBS Description |  |
| OBJNR | SAP Object Number |  |
| IO\_FLAG | Flag to identify the Internal Order | X: for internal order  Blank: for WBS |

## COST ELEMENT

This integration represents the full hierarchical structure of the cost account codes and the master account codes chart.

There are two files, with different information’s. The full file is the ElemleafHier and we have to use it to build the association among the SAP and PO cost account code. The second one will not be considerate.

Note: to open the files (.dat) provided should be used the excel using as separator fields the character 

Here attached the excel as is obtained.

The file will be uploaded using a procedure when requested.

### CostElemleafHier

The data structure received from SAP is the follow

|  |  |  |
| --- | --- | --- |
| Field name | Field Description | Note |
| M\_acc | Master Account code | PK |
| PDC | Charts of accounts code | PK |
| C\_ELMNT | Cost Element | PK |
| M\_Acc\_Descr | Master Account Description |  |
| C\_Descr | Cost Element Description |  |
| Flag\_1 | Flag |  |
| Flag\_2 | Flag |  |

The data received will be uploaded in a staging table and then insert in the association table only the SAP\_ELMNT.

Here below the staging table structures requested

In this table will be stored the data received from SAP as it are.

| Field name | Field Description | Note |
| --- | --- | --- |
| M\_acc | Master Account code | PK |
| PDC | Charts of accounts code | PK |
| SAP\_ELMNT | Cost Element | PK |
| M\_Acc\_Descr | Master Account Description |  |
| C\_Descr | Cost Element Description |  |
| Flag\_1 | Flag |  |
| Flag\_2 | Flag |  |
| Insert\_DATE | Insertingm\_ date |  |

Here below the data structure of the association table among the SAP Account Code and PO account Code.

In the Association Table the data must be inserted only. No Update or Deletion is requested.

The PO\_ELMNT will be inserted using a script or manually in backend.

FINCANTIERI must provide for each SAP cost element the kind based on the four types defined in PO.

| Field name | Field Description | Note |
| --- | --- | --- |
| SAP\_ELMNT | SAP Cost Element | PK |
| PO\_ELMNT | PO Cost Account Code | PK  This code will be inserted manually using a script starting from the information provided by Fincantieri |
| PO\_NATURE | Cost Account Code (nature) | Cost account code type |
| Insert\_DATE | Interting date |  |

Two simple reports will be created both on the association table, the first one to extract the full list of the data and another one to extract only the records without the association.

### CostElemGroupHier

This file must not be considerate.